

CLAIMS

What is claimed is:

1. A method for determining whether a connection event between a base station and a wireless transmit/receive unit (WTRU) should be accepted or rejected, the method comprising:

measuring the interference level I_0 in a candidate timeslot;

measuring the path loss L between the base station and the WTRU;

measuring the total transmit power P_0 of the base station;

determining a thermal noise level θ ;

determining a fading average signal-to-interference ratio (SIR); and

calculating a ratio R , wherein if the ratio R is above a certain threshold the connection event will be accepted and if the call is below the threshold it will be rejected.

2. The method of claim 1, wherein the base station and the WTRU are within the same cell, the method further including obtaining a value G_c , which relates to the link gain between a base station and a WTRU operating in an adjacent cell.

3. The method of claim 2 wherein the connection even is a connection addition and the ratio is obtained using the following equation:

$$R = \frac{1}{1 - \left(\frac{I_0}{\theta} - 1 \right) \frac{L \text{ SIR}}{\left(\frac{P_0}{I_0} \right) + \frac{1}{G_c}}}.$$

4. The method of claim 3 wherein the threshold is zero.

5. The method of claim 2 wherein the connection even is a connection deletion and the ratio is obtained using the following equation:

$$R = \frac{1}{1 + \left(\frac{I_0}{\theta} - 1 \right) \left(\frac{L}{\left(\frac{P_0}{I_0} \right) + \frac{1}{G_c}} \right) SIR}.$$

6. The method of claim 5 wherein the threshold is zero.

7. A method for determining whether a connection event between a base station and a wireless transmit/receive unit (WTRU) should be accepted or rejected, the method comprising:

measuring the interference level I_0 in a candidate timeslot;
determining the transmission power P_c of an existing connection that is similar to the connection event;
measuring the total transmit power P_0 of the base station;
determining a thermal noise level θ ; and
calculating a ratio R , wherein if the ratio R is above a certain threshold the connection event will be accepted and if the call is below the threshold it will be rejected.

8. The method of claim 7, wherein the base station and the WTRU are within the same cell, the method further including obtaining a value G_c , which relates to the link gain between a base station and a WTRU operating in an adjacent cell.

9. The method of claim 8, wherein the connection even is a connection addition and the ratio is obtained using the following equation:

$$R = \frac{1}{1 - \left(\frac{I_0}{\theta} - 1 \right) \frac{\frac{P_c}{I_0}}{\left(\frac{P_0}{I_0} \right) + \frac{1}{G_c}}} .$$

10. The method of claim 9 wherein the threshold is zero.

11. The method of claim 8 wherein the connection even is a connection deletion and the ratio is obtained using the following equation:

$$R = \frac{1}{1 + \left(\frac{I_0}{\theta} - 1 \right) \frac{\frac{P_c}{I_0}}{\left(\frac{P_0}{I_0} \right) + \frac{1}{G_c}}} .$$

12. The method of claim 11 wherein the threshold is zero.

13. A method for estimating interference variation caused by connection event between a base station and a wireless transmit/receive unit (WTRU), the method comprising:

obtaining signal parameters for a communications link with a WTRU;

computing a plurality of variation parameters from the signal parameters;

computing an intermediary variable based on the computed variation parameters;

in the case of an addition connection event, using the intermediary variable to compute a ratio of predicted interference and interference without the connection event resulting from the addition;

determining if the ratio exceeds a predetermined maximum value, and if the interference exceeds the predetermined maximum value deeming the interference excessive; and

in the case of the interference value not exceeding the predetermined maximum value level, computing a predicted interference change as a result of the connection event.

14. The method of claim 13, further comprising:

in the case of a deletion connection event, using the intermediary variable to compute the ratio resulting from the deletion; and

computing the predicted interference change as a result of the connection event.

15. The method of claim 13, further comprising:

calculating, as one of the variation parameters, an interference variation parameter based on a ratio of an interference level as one of the signal parameters and a thermal noise level; and

determining whether the interference variation parameter falls below a reference value, and if the interference variation parameter falls below the reference value, setting the interference variation parameter at the reference value.

16. The method of claim 13, further comprising:

calculating, as one of the variation parameters, an interference variation parameter based on an interference level I_0 as one of the signal parameters and a thermal noise level Θ as $s = (I_0/\Theta) - 1$; and

determining whether the interference variation parameter falls below a reference value, and if the interference variation parameter falls below the reference value, setting the interference variation parameter at the reference value.

17. The method of claim 14, wherein the signal parameters obtained include thermal noise level (σ^2), interference level (I_0), signal-to-interference ratio (SIR), and at least one parameter related to the system deployment.